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AUTHOR	Strickland, Guy
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ABSTRACT

This report summarizes the findings of Jackson and Lahadern who used a revised form of the Student Opinion Poll (SOP) and a questicnnaire to study the intercorrelations of attitudes and achievement. The study found that: (1) first graders have attitudes toward school work but these attitudes were not differentiated toward specific schocl subjects; (2) attitudes toward peers and play activities were not measured effectively; and (3) the child has an attitude toward school itself. Changes needed in the questionnaire include: (1) reflected items should be avoided; (2) items in which things are compared should be avoided; (3) attempts to develop scales for specific school subjects could be abandoned as a waste for first-grade questionnaires; (4) the concept of time should be avoided in writing items; and (5) more sample items should be written. Further recommendations for further research on the development and validation cf this instrument are presented. (Author/KJ)

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DEVELOPMENT OF A SCHOOL ATTITUDE QUESTIONNAIRE FOR YOUNG CHILDREN

Guy Strickland

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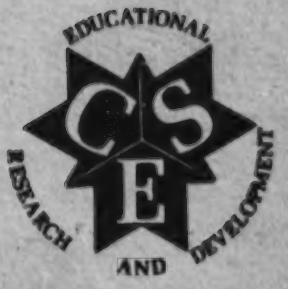

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The Attitude to School Questionnaire (ASQ) was designed to fill a need for an objective, reliable measure of first graders' attitudes toward school. Such a measure is needed in order to uncover the relationship of attitudes to other school variables, such as achievement or creativity. A favorable attitude toward school is generally considered to be a desirable objective of a school program. If this attitudinal facet of a school program is to be evaluated, then a reliable measure of attitudes is needed.

It is assumed that attitudes play an important role in school performance; that a child with a favorable attitude will achieve more and be better adjusted; and that the adjustment and achievement thus created will facilitate one another. If it is a valid assumption that attitudes play a role in school performance, then perhaps the ASQ may be used to help in the prediction of performance or to diagnose problems of attitude which will have academic consequences. If the existence of a significant relationship between attitudes and school performance has not been demonstrated, then a reliable, objective instrument is needed to examine the problem.

The latter situation seems to be the case: a significant relationship between attitudes and achievement has not been demonstrated. Various studies have reported correlations between attitudes and achievement ranging from -.10 to +.35. The differences are often due to different definitions of "attitude" implicit in the methods used to measure attitude.

That is, they differ on their definitions of what an attitude is, and which attitudes to use as variables.

An attitude is "an arrangement of mental processes, a mental 'set,' an internal disposition, or the way certain mental processes are organized in a person to make him ready to act in a particular way. A person is said to have an attitude towards an object if he regularly responds in a particular way to that object." (Allen, 1960, p. 65.) Similar definitions are offered by Tenenbaum (1940) and others.

An attitude is not an interest. Perhaps it is this common confusion which leads us to overestimate the importance of attitudes; interests may correlate with intelligence and/or achievement even if attitudes do not. "Again, despite present usage, an interest, it seems to me, is not merely a positive attitude...An attitude implies merely the readiness to react in a particular direction with respect to a given object. We do not ordinarily speak of being driven by an attitude; we are necessarily driven by our interests." (Shanks & Dunn, 1968, p. 16.)

Tschechtelin, Hipskind and Remmers (1940, p. 195) wrote "...there is substantial agreement that children's attitudes are of primary importance in the effective acquisition of knowledge, skill...What the psychologists are agreed upon as sound theory would also be substantiated by an adequate sampling of the common-sense judgment of parents and children."

Tenenbaum (1940, p. 177) wrote "Even if one takes the traditional view of learning, i.e., the mastery of subject-matter, attitudes here, too, have a dominant place. Burnham goes so far as to say that the 'condition that makes learning possible is largely the mental attitude of the learner.' Morgan likewise agrees that desirable attitudes quicken learning while undesirable ones have a reverse effect."

There have been many efforts, since 1940, to support these comments with empirical data linking attitudes and achievement. For the most part, these studies have failed to demonstrate any significant relationships.

Tenenbaum (1940) devised a Thurstone-type scale to measure the attitude of sixth-and seventh-graders toward school, teacher, and classmates. He compared these attitudes with IQ, report-card grades, and other measures of achievement; he obtained no correlation coefficient above .13 with N= about 500.

Tschechtelin, Hipskind and Remmers (1940, p. 203) tried to find a correlation at the junior high level. "No appreciable correlation was found between attitudes as measured and group intelligence test scores ($r=.1\pm.03$, N=527)..."

Jackson has conducted several research studies in the field of attitudes. In 1959, along with Getzels, he developed the Student Opinion Poll (SOP). The SOP is a Likert-type scale for sixth-graders, measuring attitudes toward teacher, curriculum, fellow students, and classroom procedures.

In a later study with Lahaderne, Jackson (1967) used a revised form of his SOP and a questionnaire devised by Flanders (The Michigan Student Questionnaire) in a study of the intercorrelations of attitudes and achievement. A summary of their findings is presented here:

TABLE 1

	Student Opinion Poll		Michigan Student Questionnaire	
	Boys	Girls	Boys	Girls
Reading Grade	.15	.16	01	06
Language Grade	.13	.16	.01	.01
Arithmetic Grade	.08	.14	.00	.00
Science Grade	.15	.19*	.06	.04
Stanford Reading	.14	.08	.08	-.07
Stanford Language	.11	.14	.02	-.06
Stanford Arithmetic	.13	.12	.06	-.05
Kuhlman-Anderson IQ	.06	.14	-.08	.01

*p<.05 N = 148 Boys N = 144 Girls

Jackson and Lahaderne, p. 17

Jackson, p. 76

Thus, as seen in Table 1, with two predictors and several criteria no significant relationship has been established in this study.

Another interesting finding of the Jackson and Lahaderne study (p. 217) was "that when teachers set out to estimate how a student will respond to an attitude questionnaire, they come closer to describing how well the student achieves in school than to how he feels about his school experience." Teachers expect a correlation between attitude and achievement, feeling that a successful child is a happy child, while failure and negative attitudes reinforce each other.

Glick (1968) studied the relationship of attitudes and achievement using the Pupil Opinion Questionnaire, a 60-item Likert scale measuring attitudes of sixth-graders toward teachers, schoolwork, peers, and school in general. He found (p. 10) "attitude-achievement correlations were here more in line with the common-sense assumption of a positive attitude-achievement relationship than the results of most previous studies have been."

Glicks's intention was to demonstrate a cause-and-effect relationship between attitudes and achievement, including some indication as to the direction of the cause-effect relationship. He employed the "frequency of change in product-moment correlation" analysis. Due to differences in stability between his achievement measure and his attitude measure, he was unable to interpret any meaningful indication of the direction of the cause-effect relationship. But he did find the highest correlations on record between attitudes and achievement in elementary school subjects, both for time-lag and for single-occasion testing.

Other interesting observations are apparent in Glick's data. Attitude to peers correlated with achievement higher than did attitude toward teachers or school in general. If this finding is not an artifact, it would be interesting to see if it holds true below the sixth grade.

Neale, Gill, and Tismer (1970) used the Semantic Differential technique to measure sixth-graders' attitudes toward specific school subjects. They found significant positive correlations between attitude and achievement for boys in social studies, arithmetic, and reading and a marginally significant correlation for science. They found that for girls, only reading had a significant correlation between attitude and achievement.

They acknowledged that their findings were different from those of Jackson (1968) or Jackson and Lahaderne (1967) and, as a reason for the

difference, suggested that Jackson measured a generalized attitude toward school while they used more specific attitudes.

Glick found that the influence of achievement on attitudes was incongruous as often as not; that is, high achievement led to low attitudes as often as to high attitudes, while low achievement led to high attitudes as often as low.

The evidence concerning the relationship between attitude and achievement in elementary school subjects, then, is mixed. Only two studies in this country show definite positive correlations. There are studies at higher levels, however, which do show significant correlations, and some studies conducted in Britain which show a correlation; a major study (1969) by Barker-Lunn of the National Foundation for Educational Research is not yet available in this country except in summary form. There are also British studies which do not show a correlation (Fitt, 1956).

Shanks and Dunn (1968) failed to find a correlation between anxiety and attitudes toward school. This finding is quite in line with the earlier work of Sarason, Lighthall, Davidson, Waite, and Roebush (1960), who proposed that anxiety stems more from the basic personality processes of the children than from the immediate conditions within the school itself, and that a pleasant school atmosphere will not lower the frequency or intensity of anxiety. The fact that a child likes school is no indication that his anxiety level is low; nor are the obverse or reverse statements true.

TABLE 2

	Attitude to School	Attitude to Class	Relationship with Teacher	Self Image
Attitude to School	____	.40	.39	.20
Attitude to Class	.40	____	.36	.09
Relationship with Teacher	.39	.36	____	.42
Self-Image	.20	.09	.42	____
Scholastic Performance Achievement Tests				
English	.20	.19	.22	.26
Problem Arithmetic	.15	.17	.14	.33
Essays	.17	.18	.21	.23
Verbal Reasoning	.17	.16	.16	.25
Non-Verbal Reasoning	.15	.15	.18	.27
Fluency	*	*	.10	.19
Flexibility	*	.11	*	.17
Originality	*	*	*	.13
Sex	.33	.20	.15	-.12

N = 2,087 children, 9-11 years old

All correlations given are significant and those greater than .11 are significant at the 1 per cent level.

*Correlations were not significant.

Barker-Lunn, pp. 66, 68.

Cheong (1967) examined the interrelations among attitude toward school, creativity, and several other variables. He found a number of significant correlations, but creativity--school attitude was not one of them:

TABLE 3

Variables	1	2	3	4	5	6
1. Experimental attitude	1.00	-.59**	.84**	.82**	.30	.29
2. Teacher discrepancy		1.00	-.81**	-.34	-.60**	-.55*
3. Teacher perception			1.00	.53*	.51*	.52*
4. Creativity				1.00	.20	-.07
5. School attitude					1.00	.47*
6. Sociometric status						1.00

* Significant at .05 level
**Significant at .01 level

Cheong, p. 189

It may be very difficult to justify any time or expense used to improve student attitudes, if one cannot demonstrate that a better attitude produces less anxiety, more achievement, better grades, or more creativity. Perhaps any effort even to measure attitudes, much less improve them, is wasted. How can we justify the attempt to measure or improve attitudes?

Holt (1964) considers attitudes important as ends in themselves, rather than as means to increase achievement. He feels that since attitudes may be all that a child really gets from school, they ought to be positive ones. Tenenbaum made a similar comment in 1940.

School personnel seem to feel that attitudes are important as ends in themselves. A recent survey (Woolley & Patalino, 1970) of educational objectives as seen by school administrators and teachers, found that

a good attitude toward school is considered to be one of the most desirable objectives for schools. Out of 105 possible objectives, attitude toward school is only less important than self-esteem and citizenship in the opinions of teachers and administrators; it is more important than reasoning, mathematics, writing, or understanding what is read. There is room for conjecture as to whether the high place given to school attitudes is determined by real educational needs, or by the internal demands of the school system.

If we consider a favorable attitude toward school to be an end desirable for its own sake, it is worthwhile to note that attitudes tend to become more negative in the course of a school year (Neale, Gill, & Tismer, 1970; Jackson, 1968), or over the school career (Neale, Gill & Tismer, 1970; Fitt, 1956; Sharples, 1969).

Several writers consider favorable attitudes toward school to be an important goal for education because of the role attitudes play in mental health (Josephina, 1940; Tenenbaum, 1940; Allen, 1960). As Allen (1960, p. 66) says,"...favorable attitudes should be encouraged so as to form a sound basis for future living....The behavior of the teachers then begins to colour considerably the child's earlier notions of authority and of himself in relation to it." Attitudes toward school then become important as they are linked with self-concept.

Attitudes may be a necessary part of interests; and it may be easier to prove a relation (particularly a causal relation) between interest and achievement than between attitudes and achievement. "One can find throughout the history of educational concern the belief that interest in, and a positive attitude toward school are primal conditions for effective learning; this conviction can be traced, in one form or another, from

Erasmus through Rousseau, Herbert, and Pestalozzi, to John Dewey, who made interest a foundational element in his theory of education." (Shanks & Dunn, 1968, p. 16)

Although studies have not clarified the cloudy relationship between attitudes and the cognitive processes, attitudes are considered to be important parts of the affective processes. Schools that are interested in the whole child must be interested in developing favorable affective outputs, including attitudes. In evaluating a whole school program, attitudes may very well have to be measured, even if they prove to be completely unrelated to cognitive outputs.

The Instrument

The aim of this research was to develop a measure of first-graders' attitudes toward school. This measure should not require individual administration, nor should it require subjective judgments in the scoring. Administration should need only the skills common to ordinary school teachers.

With these limitations in mind, it was felt that a mass-administered paper and pencil test would be superior to other possible formats (check-list for observation of contrived or uncontrived situation, interview, concensus of observers). Because of the limited vocabulary of first-graders, the semantic differential approach was felt to be inappropriate to this research.

In making a paper and pencil test for first graders, there are a number of serious limitations which the ASQ has dealt with.

First, one cannot assume that the first-grader can read at all. This instrument does not require the first-grader to read anything. The student

looks at a series of cartoons and listens as the administrator explains what is taking place. The child then shows his reaction by marking an appropriate face.

Second, one must assume that the first-grader has a limited listening vocabulary. In the ASQ, the vocabulary is controlled. Each word spoken by the administrator during the test has been checked against the Rinsland (1945) and Thorndike (1921) lists. All words are among the 2,000 most common words for first-graders except "principal", "office", and "mathematics" or "arithmetic." These four words were unavoidable and defied substitution.

The instructions contained some words of greater difficulty, according to the Thorndike and Rinsland word lists. There was a conscious effort to avoid complex syntax. In the items of the instrument there are 166 sentences, of which 143 are simple sentences, 9 are compound sentences, and 4 others have a conditional structure. Ten others have participles, infinitives, or indirect quotations.

Third, it has been observed that first-graders are easily confused even by the normal progression from one item to the next on a page. The ASQ has only one item per page. That item consists of two, three, or four cartoons arranged in a standard left-to-right format on one or two lines.

Fourth, one cannot assume that a first-grader knows his numbers well enough to respond to the numbering of items on pages. In the ASQ, the pages (and therefore the items) are differentiated by color, rather than number. The administrator can glance around the room to see if all students are working on the correct page. The child need not know his numbers or be able to read numbers; he only needs to know the colors white, pink,

blue, yellow, red, and green. Or, in practice, it is only necessary that his neighbor know these colors.

Michael and Jones (1965) established that color of paper does not affect scores which college students earn on objective achievement examinations. No determination has been made of the effect of color of paper on first-graders' scores on affective examinations. In this case, there were six alternating colors and seven alternating factors; so no color should systematically bias any particular factor.

Fifth, one should not confuse the child with a coded answer mode such as an IBM sheet or numbered Likert scale. In the ASQ, there is no coding in the response format. The child looks at the cartoon story; the last panel of the story always consists of three faces: happy, neutral, and unhappy. The child marks in the test booklet, right on the face which corresponds best to his own feelings in response to the personalized story. There is no separate answer sheet; there is not even a separate answer box. The alternatives are not designated A, B, C, or 1, 2, 3, or whatever.

The three-choice response format was felt to be adequate for first-graders. Their attitudes are not likely to be so gradated that they would need a five-choice format. It was felt that they may be confused or distracted by a five-choice format.

Sixth, it is not clear whether all first-graders can project themselves into situations described in test items. The ASQ was written in the second person; i.e., "How do you feel?" Tests which are written in the third person run several risks. Subjects may not realize that they are supposed to identify with the given central character. Subjects may take their cues from the pictures more than from their own personality

structures. If the item involves a character who is named ("The teacher sits next to Bill"), then subjects may associate "Bill" with a particular "Bill" in their class, and respond accordingly, marking down how they think "Bill" feels rather than how they feel. Finally, there is the problem of cross-sex identification.

The use of the second person alleviates most of these problems, but it does not in itself solve the problem of cross-sex identification. Separate booklets, therefore, were designed for boys and for girls. The stories are the same; only the sex of the main character is different. Both booklets use the same set of instructions; boys and girls take the test at the same time.

To aid the child in projecting himself into the stories, a stereotypic figure is used as the main character throughout all of the items; one stereotypic figure in the boys' booklets, another in the girls' booklets.

An early form of the test was adapted by Alpert and Klein from the Children's Attitudinal Range Indicator used in the Westinghouse evaluation of the Headstart program (1969). It used the cartoon format with stick-figure artwork and was administered to a sample of 150 children. The results were analyzed in the present study, using a six-factor varimax rotation and Cliff's (1966) orthogonal factor-matching program. With Cliff's program it is possible to hypothesize factors by specifying the items to define them; the program yields a least-squares fit of the extracted factor matrix to the hypothesized factor matrix. This procedure is iterated a number of times with various combinations, adding or deleting items or whole factors on the basis of the strength of their factor loadings, until the most reasonable rotation is found. The cri-

teria for "most reasonable rotation" are interpretability, maximized factor loadings on items specified to be in the subscales, and minimized factor loadings on items not specified to be in the subscales.

A number of different factors were hypothesized on one or more of the analyses of Alpert and Klein's instrument. Among them were attitudes toward principal, authority, school itself, schoolwork, teacher, peers, play activities, social relations, math, reading, and a response bias factor (where the expected answer was too obvious).

1. Attitude toward the principal appeared on all analyses.
2. Attitude toward authority also appeared when hypothesized. Some of the items in this factor were intended to measure attitude toward principal. For the new instrument, new items were written to try to measure attitude toward principal without measuring attitude toward authority in general.
3. Attitude toward schoolwork appeared as a factor whenever hypothesized.
4. The Procrustean factor rotation was used to try to find math and reading factors, largely from the items in the "schoolwork" factor. Attitude toward mathematics appeared as desired, but attitude toward reading did not appear. Additional items for reading were written for the new instrument.
5. Attitude toward school itself appeared as a factor on all analyses. One of the items in this factor was "Johnny takes out his reading book at home." All attempts to associate this item with a reading factor or a schoolwork factor failed; a possible explanation is that once the child is at home, his various school attitudes become undifferentiated.

6. Attitude toward teacher did not appear. This result was considered to be so extraordinary that it was attributed to faults in the original instrument rather than to a real absence of a specific attitude toward the teacher. It is possible that, to the child, the teacher is the school; but that would mean that teacher items would load heavily on the "attitude-to-school-itself" factor. In these analyses, teacher items fell into many other factors from "authority" to "social relations." Items were revised and new items were written in the hope that a measurable attitude toward teacher could be identified.

7. Attitude toward play activities (art, playground games, etc.) appeared as a factor.

8. A factor appeared which can best be described as a response bias factor. Included here is one item in which the expected answer was so obviously expected that the subjects began looking for it (the expected answer). That item was discarded and the data on three items which followed it were deemed unreliable.

The Field Test

The revised instrument was first administered to 19 first-graders at Curtis School, an exclusive, private school in Beverly Hills, a community with very high socio-economic status. The purpose of this administration was to test the suitability of the instructions and format. As a result of this administration, some exercise in differentiating happy, neutral, and unhappy faces was incorporated into the instructions. The grammatical structure of some of the items was altered. Because of these changes, and because of the possibly atypical nature of the sample, data from this

administration was not used in later analysis.

The instrument was then administered to 263 first-graders in four elementary schools in Simi, California, in the last two weeks of February, 1970. The subjects were in 10 classes of 29 pupils or less. No classes were used which mixed first-graders with kindergarteners or second-graders. The classes had nine female teachers and one male teacher.

The tests were administered by the staff of the Center for the Study of Evaluation to each class separately. In accordance with California state law, the teachers remained in the classrooms; by request, they did not participate in the administration of the measures. Also by request, they walked around the room if the children became restive.

The test was administered in two sections, each lasting 20 to 25 minutes. There was a break between sessions lasting from five minutes to an hour, depending on the sechedule of the school. Eight classes took the test in the morning; the other two took it between 11:00 a.m. and 1:00 p.m. No session preempted recess, lunch, art, or music.

Simi, California is a middle class suburb on the fringe of Los Angeles. There are no Negroes in the sample; perhaps 5% of the sample is of Spanish-American background, but all are English-speaking. Other minority groups are also absent.

Analysis

In a complex domain such as student attitude toward school, there is no single statistical technique completely appropriate and adequate for analyzing the data. Several approaches were used for this study.

As a preliminary, missing data were identified. Means were found for

each of the 54 variables, and the integer value nearest to the mean of the variable was assigned for each missing response. There were a total of 11 missing responses out of a total of 54 X 263 = 14,202 responses. Means, standard deviations, and other item statistics are reported in Table 4.

The raw data for the 54 variables were submitted to the 360/20 computer for computation of the Pearson r matrix. It was found that Pearson r's for the sample item were so low (-.10 to +.12) that the sample item could be considered unrelated to the other items in the test.

Sex was then tried as the 54th variable; again, Pearson r's were very low (-.13 to +.15). It seemed that sex was not related to the other variables. Table 5 presents the 53-variable intercorrelation matrix.

The raw data for 53 variables was submitted in BMD 03M, a principal components factor analysis program. Communality estimates were based upon the squared multiple correlations between each variable and all other variables. An iterative extraction procedure was applied until stable communalities were achieved. The program extracts principle-component factors equal to the number of variables, although some of the factors are imaginary, as they have negative eigenvalues. For the 53 variables, 29 factors had positive eigenvalues. Of these 29, 8 were retained for rotation. The first 8 factors accounted for 70% of the total common variance.

The eight first-order factors were rotated to a Varimax criterion. Inspection of the varimax solution revealed it to be only partly interpretable psychologically. Another rotation technique was brought into use. The first eight principal-component factors were submitted to Cliff's (1966) orthogonal factor-matching program.

In specifying the initial target matrix for the present problem, the

TABLE 4

	MEAN	STANDARD DEVIATION	RESPONSE DISTRIBUTION 1	2	3	ITEM-TOTAL CORRELATION[a]	FIRST-ORDER SUBSCALE	ITEM-SUBSCALE CORRELATION[a]	SECOND ORDER SUBSCALE	ITEM-SUBSCALE CORRELATION[a]
1	1.02	.16	98.8	0.4	0.8	.03				
2	1.35	.57	69.6	25.5	4.9	.18				
3	1.18	.48	85.9	9.9	4.2	.02				
4	1.42	.57	62.0	33.8	4.2	.05	7	.35	2	.12
5	1.55	.71	58.2	28.9	12.9	.29	5	.68	1	.48
6	1.33	.62	74.9	17.1	8.0	.26	3	.51	3	.38
7	1.11	.40	92.8	3.8	3.4	.26	6	.47		
8	1.70	.71	44.9	40.7	14.4	.35	3	.46	3	.34
9	1.63	.72	51.3	34.2	14.4	-.04				
10	1.53	.80	66.2	14.4	19.4	.11	1	.48	1	.28
11	1.24	.55	82.1	11.8	6.1	.33	8	.58	2	.39
12	1.35	.60	71.5	21.7	6.8	.16				
13	1.50	.74	65.4	19.4	15.2	.26	5	.64	1	.40
14	1.98	.76	29.7	42.6	27.8	.19				
15	2.22	.81	24.7	28.9	46.4	.36	4	.64	3	.56
16	1.30	.60	77.2	15.6	7.2	.27	8	.50	2	.29
17	1.44	.67	66.2	24.0	9.9	.45	1	.60	1	.55
18	2.03	.75	26.6	44.1	29.3	.35				
19	1.28	.50	74.9	22.4	2.7	-.07				
20	1.89	.83	40.3	30.0	29.7	.42	4	.56	3	.55
21	1.88	.89	46.4	19.0	34.6	.36	8	.76	2	.59
22	2.03	.73	24.7	47.1	28.1	.30	4	.51	3	.47
23	1.14	.41	89.0	8.4	2.7	.23				
24	1.71	.72	44.5	39.9	15.6	.45	1	.59	1	.54
25	2.04	.84	33.8	28.5	37.6	.37	7	.73	2	.55
26	1.29	.58	77.6	16.0	6.5	.41	6	.47		
27	2.58	.64	8.0	26.2	65.8	.33	4	.57	3	.49
28	2.25	.77	20.5	33.5	46.0	.27	4	.47	3	.39
29	1.36	.59	70.0	24.0	6.1	.43	3	.57	3	.37
30	1.66	.73	49.4	35.4	15.2	.31	5	.65	1	.48
31	1.22	.52	82.1	13.3	4.6	.31	6	.56		
32	2.35	.70	12.9	39.2	47.9	.26	4	.63	3	.55
33	1.41	.60	64.6	29.7	5.7	.29	5	.53	1	.48
34	1.67	.80	53.6	25.5	20.9	.40	7	.72	2	.58
35	1.15	.46	89.0	6.8	4.2	.07				
36	2.26	.80	22.4	28.9	48.7	.32	4	.62	3	.54
37	1.40	.67	70.3	19.4	10.3	.44				
38	1.63	.72	51.7	33.8	14.4	.45	3	.64		.50
39	1.36	.58	69.2	25.5	5.3	.33	1	.51	1	.40
40	1.42	.61	64.6	28.5	6.8	.36	1	.55	1	.46
41	1.76	.74	42.6	38.8	18.6	.48	2	.73	2	.61
42	1.38	.66	72.2	17.5	10.3	.41	1	.61	1	.61
43	1.44	.67	66.2	23.6	10.3	.32	3	.57	3	.37
44	1.79	.76	41.4	37.6	20.9	.42	2	.68	2	.50
45	1.35	.60	71.9	21.7	6.5	.34	3	.46	3	.33
46	1.50	.73	64.3	21.7	14.1	.42	8	.62	2	.61
47	1.23	.52	81.4	14.1	4.6	.22				
48	1.98	.80	33.1	35.4	31.6	.50	4	.66	3	.63
49	1.67	.67	44.5	44.5	11.0	.46	2	.67	2	.53
50	1.59	.82	62.7	15.6	21.7	.05	6	.65		
51	1.62	.76	55.1	28.1	16.7	.44	2	.67	2	.50
52	1.89	.82	63.1	15.2	21.7	.15	6	.69		
53	1.81	.81	43.7	31.2	25.1	.43	4	.59	3	.60
54	1.53	.69	57.8	31.2	11.0	.37	3	.51	3	.39

a These correlations are spuriously high, because items are correlated with totals of which those items are a part. No correction has been applied.

TABLE 5

VARIABLE INTERCORRELATION MATRIX

CORRELATION MATRIX AMONG 54 ITEMS AND SEX MEMBERSHIP (N = 263)

	sex	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54
sex		02	-00	00	-13	-01	-00	02	01	03	-01	10	-04	-06	04	-07	13	-01	-03	-02	-06	04	06	-02	-00	03	09	-07	04	-07	01	01	01	-01	02	02	05	03	05	-07	-04	15	08	06	04	07	-04	05	-01	06	-08	-02	-02	-01	10
1	02		-07	00	12	01	-02	09	02	06	07	03	09	05	-06	-00	10	06	05	08	-04	-06	-07	07	05	02	10	-07	-04	01	-04	-05	01	-04	02	06	-10	00	06	-03	-08	-06	-03	-01	06	01	05	-05	-06	02	-08	-00	03	06	01
2	-00	-07		00	-00	17	09	02	08	-02	01	07	-01	14	09	02	11	10	10	-01	10	03	-04	07	11	00	10	01	-07	07	05	09	01	02	-00	-02	13	09	14	03	-08	01	05	07	01	05	06	-01	11	-02	-01	02	-04	02	-00
3	00	00	00		07	-00	-04	-04	03	16	04	-05	14	01	-10	-07	-01	01	-09	17	08	-06	-04	-09	04	-09	-05	-06	-12	-06	-01	03	-08	07	-03	-01	-05	03	01	-02	02	04	-05	-03	07	-02	00	-05	-04	12	01	-02	07	-00	-06
4	-13	12	-00	07		-04	04	12	-02	12	23	03	24	-06	-01	-04	02	07	-05	15	04	-01	-14	-12	-01	-06	09	-07	-17	04	04	-02	-05	-03	-03	-07	-09	10	01	07	-06	-01	-09	-08	-04	12	-04	04	-02	04	04	-02	06	03	-08
5	-01	01	17	-00	-04		-04	11	16	-06	-10	11	02	23	11	-02	18	15	09	-02	08	08	00	15	15	05	14	07	-03	07	22	13	02	25	08	20	-01	22	09	04	06	09	22	04	05	07	-06	-00	08	03	01	-01	07	03	10
6	-00	-02	09	-04	04	-04		12	13	-02	-05	07	02	10	08	10	10	08	09	-12	21	06	05	11	-02	09	20	05	01	20	10	11	14	-02	01	-06	16	20	27	-00	-02	-03	04	23	03	04	05	-09	15	00	-05	05	-01	18	07
7	02	09	02	-04	12	11	12		03	06	-05	18	08	06	02	08	20	22	15	-03	-02	03	01	09	07	08	08	03	03	-00	-02	32	-08	02	10	-01	02	12	11	-00	11	16	01	-02	08	13	07	12	08	13	12	05	18	12	02
8	01	02	08	03	-02	16	13	03		-14	06	22	00	17	07	11	16	23	14	03	09	17	23	18	16	08	24	13	10	27	14	12	07	02	-10	08	06	07	14	10	10	06	11	08	05	02	03	-00	13	06	08	12	-01	05	03
9	03	06	-02	16	12	-06	-02	06	-14		-02	05	07	-03	-09	-15	-11	-11	-14	23	-07	-23	-19	03	03	-20	-01	-05	-16	-04	-07	08	-20	-08	02	18	-13	-03	08	-05	05	02	-06	09	04	-03	-10	-01	-04	09	-04	-01	14	-09	-05
10	-01	07	01	04	23	-10	-05	-05	06	-02		09	08	-08	-07	-04	-02	16	03	07	-02	04	-05	-00	02	03	03	-01	-07	11	-06	-01	-08	-02	-02	-05	-06	05	08	11	07	04	08	-02	04	-00	05	-05	-01	09	06	07	05	-06	-04
11	10	03	07	-05	03	11	07	18	22	05	09		-03	07	12	02	21	21	12	-02	08	20	-03	24	21	04	24	01	-00	19	05	13	-13	-02	15	01	-00	10	14	10	17	13	14	08	16	07	20	11	01	11	01	09	14	-01	01
12	-04	09	-01	14	24	02	02	08	00	07	08	-03		11	01	-09	01	09	-03	11	01	-04	-05	05	-00	-00	02	-08	-12	12	04	09	-05	02	-06	01	02	09	06	12	08	11	09	12	08	-08	-05	04	-01	10	06	02	19	04	-04
13	-06	05	14	01	-06	23	10	06	17	-03	-08	07	11		05	08	05	11	11	-07	13	-01	04	04	16	07	13	11	-06	16	23	06	05	08	04	-11	08	10	20	02	-09	02	08	02	-02	-07	-00	05	09	07	04	-03	07	22	06
14	04	-06	09	-10	-01	11	08	02	07	-09	-07	12	01	05		-04	11	14	05	-08	06	13	08	04	02	05	07	03	01	11	12	04	05	09	05	02	04	11	10	18	01	13	06	00	01	-01	-00	04	-13	11	-08	03	-04	-07	06
15	-07	-00	02	-07	-04	-02	10	08	11	-15	-04	02	-09	08	-04		09	16	15	-09	39	11	27	05	13	20	05	28	14	04	09	05	31	09	16	-06	32	09	16	07	10	05	04	02	07	04	13	08	35	08	-07	-03	-12	26	19
16	13	10	11	-01	02	18	10	20	16	-11	-02	21	01	05	11	09		22	12	-05	13	20	12	22	16	05	13	01	03	08	00	00	07	-00	05	01	03	14	13	07	03	02	06	08	17	11	-01	-02	06	04	-11	02	01	-00	09
17	-01	06	10	01	07	15	08	22	23	-11	16	21	09	11	14	16	22		23	00	18	19	11	16	25	08	22	09	11	16	14	18	05	20	02	08	12	14	-00	14	24	07	23	06	07	09	17	08	15	13	02	17	08	02	12
18	-03	03	10	-09	-05	09	09	15	14	-14	03	12	-03	11	05	15	12	23		-15	11	12	30	-01	16	16	04	22	18	03	07	07	08	07	15	-07	17	04	10	13	12	16	16	08	16	04	05	07	15	10	-01	16	-06	05	05
19	-02	08	-01	17	15	-02	-12	-03	03	23	07	-02	11	-07	-08	-09	-05	00	-15		-11	-16	-18	-05	04	-19	-04	-25	-13	03	-11	02	-18	00	-03	15	-18	-08	-11	05	-03	00	-03	-00	-05	-07	-03	-04	-19	05	08	-02	18	-10	01
20	-06	-04	10	-08	-04	08	21	-02	09	-07	-02	08	01	13	06	39	13	18	11	-11		09	11	05	17	17	00	16	17	23	09	02	20	16	05	-01	25	17	24	02	12	05	18	10	18	10	07	07	36	16	-05	03	-07	20	19
21	04	-06	03	-06	-01	08	06	03	17	-23	04	20	-04	-01	13	11	20	19	12	-16	09		12	01	22	50	07	18	13	06	04	-04	12	09	19	01	03	10	06	13	12	20	06	07	12	16	28	-07	10	15	-04	16	00	-04	14
22	06	-07	-04	-04	-14	00	05	01	23	-19	-05	-03	-05	04	08	27	12	11	30	-18	11	12		-05	09	16	04	31	25	13	06	05	23	08	10	-06	18	07	10	02	00	04	04	11	08	07	10	02	25	09	-12	10	-11	13	08
23	-02	07	07	-09	-12	15	11	09	18	03	-00	24	05	04	04	05	22	16	-01	-05	05	01	-05		-05	13	28	03	-06	22	03	07	-03	-03	10	27	-03	09	13	16	07	08	16	04	11	04	01	05	02	03	01	02	09	04	05
24	-00	05	11	04	-01	15	-02	07	16	05	02	21	-00	16	02	13	16	23	16	04	17	22	09	-05		12	19	17	14	16	15	14	07	13	14	03	11	11	09	21	21	15	25	11	20	10	19	-00	12	14	04	22	04	18	13
25	03	02	00	-09	-06	05	09	08	08	-20	03	04	-00	37	05	20	05	08	16	-19	17	50	16	13	12		06	20	15	08	08	-00	18	04	27	-02	13	18	10	06	-03	24	10	06	04	03	31	04	20	19	-07	09	04	07	07
26	09	10	10	-05	09	14	20	08	24	-01	03	24	02	13	07	05	13	22	04	-04	00	07	04	28	19	06		06	06	24	14	28	-04	07	12	06	08	15	19	10	04	15	18	16	17	14	13	07	21	07	03	22	12	17	14
27	-07	-07	01	-06	-07	07	05	03	13	-05	-01	01	-08	11	03	28	01	09	22	-25	16	18	31	03	17	20	06		22	-01	00	03	44	07	09	-12	29	-02	15	04	06	10	08	04	09	07	15	08	23	08	-18	14	-14	25	11
28	04	-04	-07	-12	-17	-03	01	03	10	-16	-07	-00	-12	-06	01	14	05	11	18	-13	17	13	25	-06	14	15	06	22		08	01	06	22	06	15	-08	11	10	03	09	09	08	10	05	09	06	13	06	20	16	03	15	-07	18	01
29	-07	01	07	-06	04	07	20	-00	27	-04	11	19	12	16	11	04	08	16	03	03	23	06	13	22	16	08	24	-01	08		05	13	-02	13	10	-02	02	28	30	16	14	12	16	17	13	12	16	05	16	24	05	17	13	16	12
30	01	-04	05	-01	04	22	10	-02	14	-07	-06	05	04	23	12	09	00	14	07	-11	09	04	06	03	15	08	14	00	01	05		06	06	14	11	-01	09	12	11	06	14	02	19	02	22	06	05	05	22	-06	-02	18	-02	16	11
31	01	-05	09	03	-02	13	11	32	12	08	-01	13	09	06	04	05	00	18	07	02	02	-04	05	07	14	-00	28	03	06	13	06		-11	06	13	03	00	10	03	16	13	22	02	05	16	-01	13	22	11	11	14	17	14	08	-00
32	01	01	01	-08	-05	02	14	-08	07	-20	-08	-13	-05	05	05	31	07	05	08	-18	20	12	23	-03	07	18	-04	44	22	-02	06	-11		03	07	-09	41	-01	10	04	-03	01	08	08	01	18	02	-05	28	08	-09	07	-20	33	10
33	-01	-04	02	07	-03	25	-02	02	02	-08	-02	-02	02	08	09	09	-00	20	07	00	16	09	08	-03	13	04	07	07	06	13	14	06	03		01	01	08	17	06	07	22	10	34	01	18	06	-02	20	06	14	-01	11	-04	13	17
34	02	02	-00	-03	-03	08	01	10	-10	02	-02	15	-06	04	05	16	05	02	15	-03	05	19	10	10	14	27	12	09	15	10	11	13	07	01		-03	11	24	12	18	11	37	04	11	20	12	44	-02	18	17	06	19	04	09	17
35	02	06	-02	-01	-07	20	-06	-01	08	18	-05	01	01	-11	02	-06	01	08	-07	15	-01	01	-06	27	03	-02	06	-12	-08	-02	-01	03	-09	01	-03		-15	-02	-06	02	14	13	08	05	00	09	-03	-08	-05	00	05	04	20	-06	-02
36	05	-10	13	-05	-09	-01	16	02	06	-13	-06	-00	02	08	04	32	03	12	17	-18	25	03	18	-03	11	13	08	29	11	02	09	00	41	08	11	-15		07	26	02	08	04	14	05	04	05	04	09	35	03	-07	-02	-16	29	06
37	03	00	09	03	10	22	20	12	07	-03	05	10	09	10	11	09	14	14	04	-08	17	10	07	09	11	18	15	-02	10	28	12	10	-01	17	24	-02	07		27	16	19	25	15	20	15	12	21	09	17	19	-08	18	03	17	15
38	05	06	14	01	01	09	27	11	14	08	08	14	06	20	10	16	15	-00	10	-11	24	06	10	15	09	10	19	15	03	30	11	03	10	06	12	-06	26	27		05	10	20	17	18	14	20	09	12	21	18	-14	08	00	27	24
39	-07	-03	03	-02	07	04	-00	-00	10	-05	11	10	12	02	18	07	07	14	13	05	02	13	02	16	21	06	10	04	09	16	06	16	04	07	18	02	02	16	05		14	30	24	11	11	03	10	19	00	09	00	20	05	01	06
40	-04	-08	-08	02	-06	06	-03	11	10	05	07	17	08	-09	01	10	03	24	12	-03	12	12	00	07	21	-03	04	06	09	14	14	13	-03	22	11	14	08	19	10	14		23	27	11	26	12	11	13	17	24	-09	25	00	07	20
41	15	-06	01	04	-01	09	-03	16	06	02	04	13	11	02	13	05	02	07	16	00	05	20	04	08	15	24	15	10	08	12	02	22	01	10	37	13	04	25	20	30	23		06	13	27	20	24	14	19	42	08	32	06	17	20
42	08	-03	05	-05	-09	22	04	01	11	-06	08	14	09	08	06	04	06	23	16	-03	18	06	04	16	25	10	18	08	10	16	19	02	08	34	04	08	14	15	17	24	27	06		09	22	12	-01	16	14	14	-05	26	02	09	22
43	06	-01	07	-03	-00	04	23	-02	08	09	-02	08	12	02	00	02	08	06	08	-00	10	07	11	04	11	06	16	04	05	17	02	05	08	01	11	05	05	20	18	11	11	13	09		10	25	16	-02	15	14	-11	13	-05	21	22
44	04	06	01	07	-04	05	03	08	05	04	04	16	08	-02	01	07	17	07	16	-05	18	12	08	11	20	04	17	09	09	13	22	16	01	18	20	00	04	15	14	11	26	27	22	10		14	18	09	21	28	-06	27	-00	14	17
45	07	01	05	-02	12	07	04	13	02	-03	-00	07	-08	-07	-01	04	11	09	04	-07	10	16	07	04	10	03	14	07	06	12	06	-01	18	06	12	09	05	12	20	03	12	20	12	25	14		23	12	16	20	-02	24	04	24	17
46	-04	05	06	00	-04	-06	05	07	03	-10	05	20	-05	-00	-00	13	-01	17	05	-03	07	28	10	01	19	31	13	15	13	16	05	13	02	-02	44	-03	04	21	09	10	11	24	-01	16	18	23		10	18	31	02	27	13	22	13
47	05	-05	-01	-05	04	-00	-09	12	-00	-01	-05	11	04	05	04	08	-02	08	07	-04	07	-07	02	05	-00	04	07	08	06	05	05	22	-05	20	-02	-08	09	09	12	19	13	14	16	-02	09	12	10		11	15	-03	12	12	01	07
48	-01	-06	11	-04	-02	08	15	08	13	-04	-01	01	-01	09	-13	35	06	15	15	-19	36	10	25	02	12	20	21	23	20	16	22	11	28	06	18	-05	35	17	21	00	17	18	14	15	21	16	18	11		15	-05	23	-01	43	21
49	06	02	-02	12	04	03	00	13	06	09	09	11	10	07	11	08	04	13	10	05	16	13	09	03	14	19	07	08	16	24	-06	11	08	14	17	00	03	19	18	09	24	42	14	14	28	20	31	15	15		01	20	07	20	24
50	-08	-08	-01	01	04	01	-05	12	08	-04	06	01	06	04	-08	-07	-11	01	-01	08	-05	-04	-12	01	04	-07	03	-18	03	05	-02	14	-09	-01	06	05	-07	-08	-14	00	-09	08	-05	-11	-01	-02	02	-03	-05	01		04	31	01	-07
51	-02	-00	02	-02	-02	-01	05	05	12	-01	07	09	02	-03	03	-03	02	17	16	-02	03	16	10	02	22	09	22	14	15	17	18	17	07	11	19	04	-02	18	08	20	25	32	26	13	27	24	27	12	23	20	04		04	21	21
52	-02	03	-04	07	06	07	-01	18	-01	14	05	14	19	07	-04	-12	01	08	-06	18	-07	00	-11	09	04	04	12	-14	-07	13	-02	14	-20	-04	04	20	-16	03	00	05	00	06	02	-05	-00	04	13	12	-01	07	31	04		-05	-01
53	-01	06	02	-00	03	03	18	12	05	-00	-06	-01	04	22	-07	26	-00	02	05	-10	20	-04	13	04	18	07	17	25	18	16	16	08	33	13	09	-06	29	17	27	01	07	17	09	21	14	24	22	01	43	20	01	21	-05		21
54	10	01	-00	-06	-08	10	07	02	03	-05	-04	01	-04	06	06	19	09	12	05	01	19	14	08	05	13	07	14	11	01	12	11	-00	10	17	17	-02	06	15	24	06	20	20	22	22	17	17	13	07	21	24	-07	21	-00	21	

NOTE: Decimal points omitted

hypothesized subscales (attitudes to school, schoolwork, teacher, principal, peers, play, math, and reading) were used. The values entered in the initial target matrix were the square roots of the communalities for loadings of variables on their hypothesized factors, and zeros elsewhere. The initial rotation showed that some variables did not fit with their hypothesized factors. A succession of rotations followed, changing the target matrix as the results of each rotation indicated, but always maintaining psychologically interpretable factors. Some variables were not assigned to hypothesized factors. The fifth rotation appeared to be satisfactory and was accepted as the final solution. The eight-factor rotated matrix is presented in Table 6.

Items were assigned to subscales on the basis of the factor pattern on the fifth rotation. Subscale scores were then factor analyzed using BMD 03M to obtain a second-order factor solution. Communality estimates were based upon the squared multiple correlations between the subscale score and all other subscale scores. An iterative extraction procedure was applied until stable communalities were achieved.

For the eight variables, five positive eigenvalues appeared, of which three were retained for rotation. The three retained variables accounted for 94.2% of the total common variance. The three-factor rotated matrix is presented in Table 7.

Interpretation of First-Order Factors

The first factor was hypothesized as an "attitude to school" factor. Items with highest loadings on this factor were:

17. You are visiting your aunt and uncle.
    They ask you if you like your school.

TABLE 6

ROTATED FACTOR MATRIX

Item	School	Schoolwork	Authority (Non-Threat)	Authority	Show & Tell	Peer	Math	Reading
	1	2	3	4	5	6	7	8
1	.00	-.12	.17	.05	.16	.09	.06	.04
2	-.09	-.09	.00	.13	.02	-.03	-.10	.20
3	-.22	.08	-.12	.16	.14	-.08	-.34	.22
4	.02	-.01	.09	-.03	.55	.13	-.05	.12
5	-.05	-.14	.42	.19	.01	.09	.07	.03
6	.06	.05	.02	.05	.06	.40	.12	.07
7	.29	-.18	.21	.13	.08	.20	-.11	.22
8	.08	-.21	-.14	.25	.09	-.13	.08	.25
9	-.33	.02	-.07	.12	.19	.03	-.18	.02
10	.20	.01	.22	-.08	.05	.25	.01	.31
11	-.19	-.03	-.12	.13	-.07	-.12	-.22	.20
12	-.03	-.15	.13	.15	.37	.20	.18	-.06
13	.09	-.06	.08	-.04	.23	-.07	.08	.20
14	.06	-.01	.06	.52	.03	.01	.05	.07
15	.14	-.13	.24	.04	.11	.05	-.03	.27
16	.49	-.06	.08	.12	.14	.22	.00	.21
17	.22	-.00	-.06	.29	.10	.08	.03	.22
18	-.11	-.10	-.01	.33	.11	-.10	.01	.20
19	.12	.02	.24	.38	.16	-.05	.04	.03
20	.16	.03	.02	.09	.02	-.15	.23	.59
21	.11	-.03	-.01	.44	-.02	-.03	-.03	.20
22	-.01	-.01	.32	-.09	.13	.21	-.20	.27
23	.30	.16	.07	.16	.14	.12	.03	.16
24	-.04	.05	.00	.23	.07	-.06	.33	.47
25	.13	.06	.34	.07	.10	.34	-.05	.15
26	.07	.02	-.02	.53	.02	-.06	.01	.15
27	.10	.13	-.10	.37	-.06	.01	-.05	.20
28	.22	.06	.43	.04	.07	.15	.11	.09
29	.09	.05	.09	.15	.32	.06	.02	.00
30	.11	.17	-.01	.06	.09	.51	.02	.04
31	-.02	-.05	.05	.59	-.01	-.20	.02	.03
32	.28	.19	-.04	.10	.43	-.10	.01	-.07
33	-.13	.38	.03	.13	.04	.11	.26	.34
34	.02	-.15	-.09	.23	-.07	-.12	.30	-.12

TABLE 6

ROTATED FACTOR MATRIX (CONTINUED)

Item	School	Schoolwork	Authority (Non-Threat)	Authority	Show & Tell	Peer	Math	Reading
	1	2	3	4	5	6	7	8
35	.03	-.07	.10	.55	.11	-.04	.08	-.06
36	.08	.20	.32	.06	.23	.03	.27	.11
37	.00	.09	.51	.22	.16	.01	.17	-.02
38	.27	.17	.05	-.02	.10	.06	.10	.16
39	.36	.39	.08	.06	.11	-.02	-.13	.07
40	.07	.51	.07	.05	.10	.14	.25	.24
41	.38	.20	.14	.11	.37	-.08	-.15	.06
42	.01	.21	.40	.10	-.04	-.03	-.02	.08
43	.21	.37	.14	.11	.11	.05	-.01	.10
44	.05	.28	.25	.13	-.05	-.00	.03	.10
45	.00	.36	.08	.17	-.17	.13	.30	.36
46	.16	.19	-.06	.09	.14	.13	.06	-.05
47	.04	.19	.20	.57	.04	.14	.04	-.02
48	.20	.43	.15	.09	.01	.04	.24	.09
49	-.01	-.01	.17	.11	.03	-.36	-.08	.03
50	.26	.42	.09	.15	-.01	.10	-.01	.16
51	-.02	-.11	-.02	.25	-.00	-.41	-.10	-.01
52	-.05	.23	.26	.52	.04	.13	.11	-.17
53	.06	.31	.23	.18	.16	-.11	-.00	.07
Alpha coefficient	.55	.62	.58	.76	.55	.48	.21	.50

TABLE 7

SECOND ORDER FACTOR MATRIX

	1	2	3
Attitude to School	.64	.25	.22
Schoolwork	.29	.43	.25
Authority (Non-Threat)	.26	.24	.52
Authority	.14	.23	.55
Show & Tell	.45	.04	.20
Peer	.16	.05	.35
Math	.03	.61	.15
Reading	.17	.66	.13
Alpha Coefficient	.59	.69	.77

42. You are at home, having dinner.
Your parents ask you if you like the kids in your class.

40. You are on your way to school.
You get to school.
You open the door and go inside.

It appears that these items reflect a generalized attitude toward school and that the factor may indeed be called "attitude toward school."

The second factor was hypothesized as "attitude toward school work." Items with highest loadings were:

41. Your class is doing arithmetic.
You are doing your arithmetic.

49. The class is sitting down and working.
You are also doing your work.

51. It is time to write a story.

There are three first-order factors involving school work; the "attitude toward school work," and also factors measuring attitudes to math and to reading. The three factors do not appear to fit an orthogonal pattern. Items which load on one factor usually load strongly on one or both of the others.

The third factor was hypothesized as "attitude toward teacher." Items with highest loadings were:

38. You are walking down the hall at school.
(pause). You see your teacher walking down the hall.

29. The class is putting its chairs in a ring.
    You sit down. Your teacher sits beside you.

6. You are walking to school in the morning.
   You see the principal driving to school.

Items on this scale are not restricted to items involving "teacher." They all seem to involve an authority figure in a non-threatening or non-controlled situation; consequently, the factor can be called "attitude to non-threatening authority," or "attitude to authority in non-controlled situations."

The fourth factor was hypothesized as an "attitude toward the principal" factor. This factor had a larger number of higher loadings, highest of which were:

32. You are on your way to the principal's office.
    You are at the principal's office.
    You open the door and go inside.

48. The whole school is together.
    The principal is speaking to you.

36. The mailman brings some mail.
    There is a letter for your parents from the principal.

There are other items, with only slightly lower loadings, which involve the teacher in an authority situation. Because of these items, it seems more appropriate to label this factor "attitude to school authority,"

bearing in mind that the principal is the main authority figure.

The fifth factor was hypothesized as "attitude toward peers" and the sixth factor was hypothesized as "attitude toward non-academic activities." Neither of these two factors appeared as hypothesized. Some of the items formed a factor best interpreted as "attitude toward show-and-tell activities"; items with high loadings on this factor were:

5. Some children are painting.
   You have made one of your best pictures.
   You show it to one of the other kids.
   Show what <u>his</u> face is like.

33. You are at lunch. You are talking to someone
    from your class.
    You are telling what you think of your school.

13. You have an idea.
    Your teacher says it's a good idea.
    You go to tell your idea to the principal.

Other items involving peers and play combined to form the sixth factor, with highest loadings on these items:

31. During recess the kids are playing ball.
    You are playing ball.

7. You get presents for your birthday.
   One of the presents is pencils, pens, and paper
   for school work.

52. (reflected) There are too many kids in your class.
You will be moved into another class.

This factor is best interpreted as "attitudes toward peers and play activities."

The seventh factor was hypothesized as "attitude toward math." It was found that this attitude is not strongly differentiated from attitude toward reading or toward school work in general. Items loading on this factor also load on other factors:

4. (reflected) You are walking to school in the rain.
You see someone's arithmetic work in a mud puddle.

25. Tomorrow, the class will use more time for arithmetic.

The seventh factor may be called "attitude toward math," but it cannot be considered a strong factor.

The eighth factor was hypothesized as "attitude toward reading." The loading pattern for this factor indicates that it is oblique to the math factor and the reading factor. Highest loadings on this factor were:

21. Tomorrow, the class will use more time for reading.

25. Tomorrow, the class will use more time for arithmetic.

46. There is a lot of time left in reading class.

The concept of time seems to have a strong influence on this factor. However, since most of the items involve reading, the best interpretation of this factor is that it measures "attitude toward reading." It cannot be considered a strong factor.

Factor analysis of the subscale scores for the eight factors generated three second order factors, as reported in Table 4. The first of these factors has these loadings:

.64 Attitude to School

.45 Attitude to Show and Tell Activities

There are various possible interpretations of this factor. First, some of the items are similar; some "attitude to school" items have a show-and-tell type of component, and the "attitude to show and tell activities" often involve showing or telling about school things. Second, it may be that first-graders think of school primarily as a place to show and tell. One is reminded that children's dialogue has been called "collective monologues."

The second factor has these loadings:

.43 Attitude Toward School Work

.61 Attitude Toward Math

.66 Attitude Toward Reading

It was expected, on the basis of the interpretation of the first-order factors, that these three scales would cohere. They had appeared to be obliquely related to each other. The existence of the second order factor seems to indicate that at the first-grade level, children do not discriminate clearly among math, reading, and school work in general. It seems that these three things form a unitary concept to which children have an undifferentiated attitude. It may be that the child has not developed

differentiated attitudes toward math, reading, and school work in general. It is also possible that attitudes toward math, reading, and school work in general are not differentiable concepts.

The third factor has these loadings:

.52 Attitude to Non-threatening Authority

.55 Attitude to Authority

.35 Attitude to Peers and Play

The first two loadings would indicate that the factor is an authority factor, but the third loading casts doubt upon this interpretation. However, examination of the items in the "Peers and Play" scale reveals a strong authority component, albeit of the impersonal, social-rule authority type. It seems fair, therefore, to consider this factor an authority factor.

The alpha coefficient for 44 selected items is .83. The alpha coefficient for the entire questionnaire, including items not used for any subscale, is .81.

Discussion

This study found that the first-graders' attitudes toward teacher and principal are strongly influenced by their attitudes toward authority; that the child perceives teachers and principals somewhat differently in structured and non-structured situations; possibly as threatening or non-threatening authorities. This study also found that first-graders have attitudes toward school work; but the study did not find differentiated attitudes toward specific school subjects. The study found that the

child has an attitude toward school itself, and that this attitude is influenced by the kind of social interactions the child has in schools, as shown by the coherence of the first and fifth first-order factors.

The study was not able to measure effectively the attitudes toward peers and toward play activities. This is probably the fault of the test; items did not separate the two attitudes. Furthermore, the items usually had such highly positive response that there was little variance in the items or in their resultant subscale scores.

Certain aspects of this questionnaire ought to be changed if it is further developed or if this study is replicated. The format should probably remain the same, but some item-writing approaches should be different.

1. Reflected items should be avoided, as all children cannot handle a negation. It can be seen in the statistical analyses that reflected items have lower Pearson r correlations and lower point-biserial correlations. In place of the reflected items, there should be items in which a positive response is desirable, but not obviously expected.

2. Items in which things are compared should be avoided. First-graders seem unable to balance one attitude against another; responses tend to be erratic because they are based on influences which vary among children. Items on the questionnaire which involve comparisons have low Pearson r, low point-biserial correlations, and indefinite factor analysis patterns.

3. Attempts to develop scales for specific school subjects could

be abandoned as a wasted effort for a first-grade questionnaire. It would be useful to have good items involving specific school subjects, as part of a general "school work" subscale.

4. The concept of time should be avoided in writing items. First-graders may find the time element more salient than the attitude which one is trying to measure. First-graders do not have the same finite concept of time that adult item-writers have; to avoid confusion the concept of time should not be introduced.

5. More sample items should be written. In this questionnaire, the first five to eight items have lower reliability than they might have had, because the children were not yet responding to the particular stimuli intended by the test.

6. For a sample of mixed ethnic or social background, other drawings might be necessary. Flowered dresses, short pants, and blond hair may be feasible for a white middle-class sample, but might provoke different responses from other groups.

In addition to the comments above, there are some recommendations for further research on the development and validation of this instrument.

1. The impact of color of paper on affective tests for first-graders has not been established. It appears from this questionnaire that there may be some effect. Many of the items with highest factor loadings were on red paper.
2. Field testing of the instrument should be replicated on a

less homogeneous sample. A review of the literature indicates that there should be no differences in attitude based on social or ethnic differences, but it would be worthwhile to see if the factor structure is indeed the same for various groups.

3. With a larger sample, it would be possible to do separate factor analyses for girls and for boys. Comparison of Pearson r's for the sex variable on this study indicates that there should be little effect of sex; but this remains to be proven.

The implications and possible uses of a reliable, well-validated measure of first-graders' attitudes toward school are many. A good attitude test is necessary if one is to shed light on the existence of a correlation between attitudes and achievement, IQ, race, creativity, anxiety, or other variables at the first-grade level. Further, a good attitude test is needed for the evaluation of the affective aspect of school programs, even if attitudes have no apparent effect on cognitive outputs.

One could study the effect, on a child's attitudes, of various educational programs, curricula, school organizations, teacher personality types, school integration, or other influences. An attitude test would be of particular value in assessing (otherwise) unexpected outcomes.

A good questionnaire would be useful in measuring cross-cultural differences in response to various educational programs, organizations, teacher types, etc.

It is possible that attitudes may serve as a moderator variable. In order to differentiate groups on the basis of attitudes so that further

analyses may be made, a reliable measure of attitudes is needed.

It is hoped that the Attitude to School Questionnaire may serve as the germinal seed for an instrument which will have such important uses.

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APPENDIX 1

MANUAL OF INSTRUCTIONS

I think first graders are important people, and I want to find out what first graders think. You can help me by playing a game and showing me how you feel about some things. (Draw faces on blackboard.)

Here are three faces: a happy face, an unhappy face, and a plain face.

If someone hit you, which is your face?

Yes, (pointing) the unhappy face is your face.

If someone gave you an ice cream cone, which face is yours?

Yes (pointing), the happy face is your face.

If someone gave you a dog, which face is yours?

Well, if you like dogs, this (pointing) is your face. If you don't like dogs, this (pointing) is your face. If you're not sure, then the plain face (pointing) is your face.

Now I am going to give out some papers. Write your name. Now turn to the next page, the white page. Follow the pictures as I tell the story.

You are running.

You trip over a rock.

You fall.

What is your face like?

Circle the face like your face.

Did everyone circle the unhappy face?

2. Now turn to the pink page.

The kids are playing a game.

You ask if you can play, too.

They say you can, if you play fair.

What is your face like?

There are no wrong answers; the face that shows how you feel is the right answer.

3. Now turn to the blue page.

   They are going to tear down your school and build a highway.

   How do you feel about this?

4. Now turn to the yellow page.

   You are walking to school in the rain.

   You see someone's arithmetic (or math) work in a mud puddle.

   How do you feel?

5. Now turn to the red page.

   Some children are painting.

   You have made one of your best pictures.

   You show it to one of the other kids.

   Show what his face is like.

6. Now turn to the green page.

   You are walking to school in the morning.

   You see the principal driving to school.

   How do you feel about this?

7. Now turn to the white page.

   You get presents for your birthday.

   One of the presents is pencils, pens, and paper for schoolwork.

   How do you feel about that?

8. Now turn to the pink page.

You are at your desk doing your work.

Your teacher is standing behind your desk.

Teacher puts her hand on your shoulder.

How do you feel?

9. Now turn to the blue page.

You get a comic book.

You find that it is all pictures and no words.

How do you feel about this?

10. Now turn to the yellow page.

You came to school in the morning.

There is a sign near the door.

It says, "No School Today."

Show how you feel.

11. Now turn to the red page.

You are looking at your arithmetic (or math) book.

It tells you how to play an arithmetic game.

What do you think of that?

12. Now turn to the green page.

There are a lot of kids in your class.

Some other kids will move to a different class.

Show how you feel about that.

13. Now turn to the white page.

You have an idea.

Your teacher says it's a good idea.

You go to tell your idea to the principal.

Show what your face is like.

14. Now turn to the pink page.

Dinner is over and mother is cleaning up.

You could help her or do your homework.

You take out your homework.

Show which is your face.

15. Now turn to the blue page.

Your teacher is talking to your parents.

How do you feel?

16. Now turn to the yellow page.

It is your birthday.

Two of your birthday presents are books to read.

How do you feel about this?

17. Now turn to the red page.

You are visiting your aunt and uncle.

They ask you if you like your school.

Which is your face?

18. Now turn to the green page.

Your class is working.

It is time to do a page of number problems.

Show which is your face.

19. Now turn to the white page.

They are making teams for a game.

You are the last one picked.

How do you feel?

20. Now turn to the pink page.

It is open house at your school.

The principal is talking to your parents.

How do you feel?

21. Now turn to the blue page.

Tomorrow, the class will use more time for reading.

Show how you feel about this.

22. Now turn to the yellow page.

You are sitting in the classroom.

Your teacher asks you to come over to her.

You walk over to her.

How do you feel?

23. Now turn to the red page.

The library has just got a lot more books.

How do you feel about this?

24. Now turn to the green page.

You are sitting at home.

You are thinking about what to do.

You take out your reading book from school.

What is your face like?

25. Now turn to the white page.

Tomorrow, the class will use more time for arithmetic (or math).

Show how you feel.

26. Now turn to the pink page.

You are walking to school.

You see some kids from your class.

What is your face like?

27. Now turn to the blue page.

You are at school.

Your teacher tells you to go to the office because the principal wants you.

You go to the principal.

What is your face like?

Here are some more pictures.

We do the same things.

Write your name.

28. Now turn to the white page.

It is Saturday and it's raining very hard.

You take out your schoolbooks.

How do you feel?

29. Now turn to the pink page.

The class is putting its chairs in a ring.

You sit down.

Your teacher sits beside you.

How do you feel?

30. Now turn to the blue page.

You wrote a story. The teacher has not heard it yet.

You read it to the other kids.

Show what your face is like.

31. Now turn to the yellow page.

During recess, the kids are playing ball.

You are playing ball.

What is your face like?

32. Now turn to the red page.

You are on your way to the principal's office.

You are at the principal's office.

You open the door and go inside.

How do you feel?

33. Now turn to the green page.

You are at lunch.

You are talking to someone from your class.

You are telling what you think of your school.

Which is your face?

34. Now turn to the white page.

There is a lot of time left in arithmetic (or math) class.

How do you feel?

35. Now turn to the pink page.

Some children are playing a game at recess.

They won't let you play. You will play by yourself.

How do you feel?

36. Now turn to the blue page.

The mailman brings some mail.

There is a letter for your parents from the principal.

How do you feel?

37. Now turn to the yellow page.

You are all given books so you can work at home.

Show how you feel about this.

38. Now turn to the red page.

You are walking down the hall at school.

(pause)

You see your teacher walking down the hall.

How do you feel?

39. Turn to the green page.

You have some time to read before you go to sleep.

You pick a book to read.

Which face is your face?

40. Now turn to the white page.

You are on your way to school.

You get to school.

You open the door and go inside.

What is your face like?

41. Now turn to the pink page.

Your class is doing arithmetic (or math).

You are doing your arithmetic (or math).

What is your face like?

42. Now turn to the blue page.

You are at home, having dinner.

Your parents ask you if you like the kids in you class.

What is your face like?

43. Now turn to the yellow page.

You are going to the principal's office to get some more chalk.

How do you feel?

44. Now turn to the red page.

Your class is doing reading <u>and</u> arithmetic (or math).

<u>You</u> are doing your <u>reading</u>.

What is your face like?

45. Now turn to the green page.

You need some help in your work.

The teacher comes over to help you.

Show how you feel.

46. Now turn to the white page.

There is a lot of time left in reading class.

How do you feel?

47. Now turn to the pink page.

You are on the playground.

You see some children playing.

One of the kids asks you to play with them.

What is your face like?

48. Now turn to the blue page.

The whole school is together.

The principal is speaking to you.

Show how you feel.

49. Now turn to the yellow page.

The class is sitting down and working.

You are also doing your work.

What is your face like?

50. Now turn to the red page.

Your teacher is changing to teach a different class.

You will have a new teacher.

Which face is your face?

51. Now turn to the green page.

It is time to write a story.

Show how you feel.

52. Now turn to the white page.

There are too many kids in your class.

You will be moved into another class.

How do you feel about this?

53. Now turn to the pink page.

The principal is standing in front of your class.

How do you feel?

54. Now turn to the blue page.

At lunch, you are talking to someone from your class.

You are talking about your teacher.

What is your face like?

APPENDIX 2

THE INSTRUMENT

The Attitude Toward School Questionnaire is presently under developmental copyright and is not included in this report.

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